

Introduction to Oceanography
Cabrillo College, Spring Semester, 2019
Instructors: David Schwartz & Lauren Hanneman
<http://www.cabrillo.edu/~dschwartz/>

LECTURE TOPICS	Text Assignments	Dates
1. Introduction to Oceanography.....	1	1/29
2. History of Oceanography	Prologue	1/31, 2/5
3. Bathymetry & Sea Floor Topography	3 (83 – 92)	2/5, 2/7
4. Sea Floor Spreading; "The Origin of Ocean Basins"...	2	2/12, 2/14
5. Marine Sediment	3 (92 – 109)	2/19, 2/21, 2/26
6. Shoreline and Coastal Processes	Lecture only	2/28, 3/5, 3/7,
7. Seawater Chemistry.....	5	3/12, 3/14, 3/19
MIDTERM on Thursday 3/21 includes all lecture material, the text book and labs 1 through 4		3/21
8. Winds, Currents and Ocean Circulation.....	portions of 6 and 7	4/2, 4/4, 4/9
9. Waves.....	9	4/11, 4/16, 4/18
10. Tides.....	10	4/23, 4/25
11. Glacioeustatic & Geoeustatic Sea Level Changes	Lecture only	4/30, 5/2
13. Marine Ecology.....	11	5/7
14. Life in the Water; Plankton & Nekton.....	portions of 12, and 13	5/9, 5/14, 5/16
15. Ocean Resources & Pollution.....		5/17
16. Comprehensive Final Exam is 10 a.m. - 12:50 p.m. in Room 450		5/21 (Tuesday)

All Beach Profiles & Internet Research Reports are due on Thursday May 9th

REQUIRED TEXTS: Both required books are available at the Cabrillo College bookstore.

1. **Investigating Oceanography**, Sverdrup, K. and Kudela, R., 2015, McGraw Hill, **2nd Edition.**
2. **Introduction To Oceanography Lab Workbook**, Schwartz, D., Bloechl, W., Olin, C.,
7th Edition, 2015

EVALUATION SYSTEM

Participation / Attendance = 10 points (~2%)

Lab Quizzes (six)= ~175 points (~32%)

Lab Projects = 60 - 70 points (~10%)

Midterm = 150 points (~28%) Thursday March 21st Room 450

Final Exam = 150 points (~28%) Tuesday May 21st 10:00 a.m. Room 450

TOTAL = 555 Points (545 Pts for Beach Profilers)

Optional Research Report = 40 points (see below for more details)

FINAL GRADE BREAKDOWN:

89% and above = A

79% - 88% = B

67% - 78% = C

55% - 66% = D

<55% = F

No make-up quizzes or midterm will be given unless there are verifiable barriers (death in family, hospitalization/illness etc.). Pass / Non Pass (P/NP) is a grade option in this course. If you decide for the P/NP grade option, a signed written agreement must be given to David Schwartz. The deadline for the P/NP decision will be announced in class.

OPTIONAL RESEARCH REPORTS (worth 35 extra points): The Research Reports to choose from are the **“Beach Profile Project”** or the **“INTERNET Research Project”**. Both require a final paper that will be due at the last lecture. We will give you some important information that will outline and describe the specific format that all the papers **MUST** be written in. This format will consist of an Introduction section followed by Materials / Methods, Results, Discussion and Conclusion. You can have one or two partners for the Beach Profile Research Report (one paper, two names, same grade). The INTERNET Research Report must be a solo effort. **Students can not do more than one research report for increased credit. All Research Reports must be printed (not hand written).**
The last day to start all Research Projects is Sunday February 17th.

THE FOLLOWING IS FOR BEACH PROFILERS ONLY:

- Last Day to Beach Profile Line #1 is Sunday 2/17
- Last Day to Beach Profile Line #2 is Sunday 3/17
- Last Day to Beach Profile Line #3 is Sunday 4/7
- Last Day to Beach Profile Line #4 is Sunday 5/5
- Rough Draft of Lines 1 and 2 due in lab 3/19 or earlier
- Rough Draft of Intro, Materials / Methods due in lab 4/16 or earlier

Community Activity + Short Report: Anyone enrolled in Ocean 10 may choose to do the **“Community Activity + Short Report”** project. Upon successful completion of this project, **15 extra points** will be added onto your final score. **You will need to perform at least one full day (6 to 8 hours +, arranged on your own time) doing some type of community activity to earn 20 points.** This activity must be verified and followed up with at least a one-page summary explaining the experience and relating it to the class. Working with **Project MATE**, Save Our Shores, Surfrider Foundation, The Coastal Watershed Council (CWC), Department of Fish and Game, Moss Landing Marine Labs, Long Marine Lab, CSUMB, Cal Poly, Cabrillo College Oceanography Department, attending seminars or going out to sea are some of our ideas. We encourage other ideas but all endeavors **need to be approved by the Instructors before the work begins.** **The one page summary report is due two weeks (or sooner) after completion of the project.**

All Community Activity reports must be “Typed” (not hand written).

SPRING 2019 SEMESTER LAB INFORMATION

Please Read this entire page very Carefully!

PLEASE BRING COLORED PENCILS AND CALCULATORS TO ALL LABS

Everyone enrolled in this course is required to complete all lab exercises and take **6 lab quizzes by their respective deadlines**. An outline of the lab schedule, all reports and projects and quiz dates will be given to you and will also be announced regularly in lecture and lab as the course progresses.

You must do lab work in your lab only. Students may not attend other Ocean 10 labs. Failure to comply with all due dates, deadlines and rules may result in loss of points.

SIX REQUIRED LAB PROJECTS: These projects will be due and collected for evaluation at announced deadlines. No late projects will be accepted and the student will receive a zero unless the student shows verifiable barriers (in hospital), death in family etc...

The following six lab projects are worth 60/70 points: (60 points if you are Beach Profiling since you are not required to do the “Mystery Beach” project.)

1. Bathymetric Map & Cross Section (Lab 2, 10 points)
2. Tectonic Map & Earthquake Plots from first 5 Labs (Lab 4, 20 points)
3. Beach Sand Chart (Lab 5, 10 points)
4. Tide Plot (Lab 7, 10 points)
5. Mystery Beach (Lab 8, 10 points) (*Optional if you are participating in the Beach Profiling Project.*)
6. Plankton Chart (Lab 9 10 points)

The following are other Ocean 10 lab activities. These labs do not have any graded “projects” that you will turn in. Information from these labs will be covered on quizzes, the midterm and final exams.

- English / Metric Conversions & Sea Floor Geography (Lab 1)
- Nautical Charts (Lab 3)
- Waves (Lab 6)
- Marine Sediments, Plankton and Plate Tectonics (Lab 9)

PARTICIPATION AND PROMPTNESS:

Participation is required at all class meetings. Missing only one lecture will put you behind. If you cannot attend a lecture or lab it is a good idea to call or leave a message at 479-6495. If a student misses the equivalent of 2 weeks of class, the student may lose points and the Instructor may drop that student. Also, **please arrive on time to the lectures.** When people arrive late, it is a distraction to many. If you arrive late, quietly sit in the **back rows.** Please do not walk down the aisle.

REMINDER

It is each student’s responsibility to keep in touch / communicate with the instructors if you are experiencing difficulties / problems in Ocean 10. We have a strong support system: four Oceanography Instructors, daily office hours, a staff of helpful Student Assistants and a Math Learning Center that you are welcome to use.

Oceanography Department Office Phone: 479-6495
Cabrillo College Switchboard: 479-6100
David Schwartz’s Office Hours in Room 705C:
M/T/W: 9:30 – 10:30am, TH: 9:30 – 10:30am, 12:45 – 1:45pm
Last Office Hour is Thursday May 16 (no office hours during finals week)

Learner Outcomes or Course Goals

Two Learner Outcomes have been defined and they are as follows:

- 1) Construct and describe maps, charts and graphs and analyze and interpret spatial processes and data relating to geological, chemical, physical and biological oceanography.
- 2) Solve simple word and numerical problems about oceanography using linear equations and conversion factors.

The following is more information on specific activities associated with the identified Learner Outcomes for Ocean 10:

Activities associated with Learner Outcomes #1

- a. Inspect the shore environment and construct a “beach-erosion map” displaying the spatial distribution of protective materials used by humans to retard wave erosion of coastal landforms. (Required semester long project)
- b. Construct a bathymetric map and cross section. (Lab 2)
- c. Demonstrate navigation techniques using standard nautical charts, parallel rules, hand compass and compass dividers. (Lab 3)
- d. Collect and plot real time earthquake data for 5 weeks and recognize trends. (Lab 4)
- e. Identify and examine the chemical makeup and general source of common beach sands from around the world. (Lab 5)
- f. Survey beach profiles over the semester and interpret and display the results. (Optional research activity & report)
- g. Construct a tide plot and analyze the general trends. (Lab 7)

Activities associated with Learner Outcomes #2

- a. Calculate English / Metric conversion problems. (Lab 1, 2, 3, 4, and 6 and objective questions throughout the course)
- b. Solve problems involving rate, distance and time associated with acoustics, navigation, sea floor spreading, waves, tides and marine sediments. (Objective questions throughout the course)
- c. Calculate vertical exaggeration of cross sections given horizontal and vertical scales. (Lab 2 and objective questions throughout the course)

Students with disabilities:

Students needing accommodations should inform the instructor. As required by the Americans with Disabilities Act (ADA), accommodations are provided to insure equal access for students with verified disabilities. To determine if you qualify or need assistance with an accommodation, please contact ACCESSIBILITY SUPPORT CENTER (Formerly DSPS), Room 1073, (831)479-6379.

Spring 2019 Ocean 10 Lab Agenda

- **WEEK #1 Jan 29: Introduction to Course and Lab, Lab #1**
- **WEEK #2 Feb 5th: Lab #1 English / Metric Conversions, Earthquake Plots, Sea Floor Geography (Beach Profiling Instructions / Discussion)**
- **WEEK #3 Feb 12: Introduction to Lab #2 Sea Floor Topography and Bathymetry Construct Monterey Bay Bathymetric Map.
QUIZ #1 (Covers Lab 1, History of Oceanography & Geologic Time from lecture)**
- **WEEK #4 Feb 19: Complete Lab #2 Sea Floor Topography and Bathymetry.**
- **WEEK #5 Feb 26: Intro to Lab #3 Nautical Charts. Bathy Maps & Topographic Profiles due.
QUIZ #2 (Covers Labs 1 and 2 & Sea Floor Topography from lecture)**
- **WEEK #6 March 5: Lab #3 Nautical Charts**
- **WEEK #7 March 12: Introduction to Lab #4 Cont Drift, SFS and Plate Tectonics
QUIZ #3 (Covers Lab 3 Nautical Charts only)**
- **WEEK #8 March 19: Complete Lab #4 Cont Drift, SFS and Plate Tectonics. A draft of Lines 1 and 2 are due for all Beach Profilers.
QUIZ #4 (Covers Lab #4, Cont Drift, SFS and Plate Tectonics and Marine Sediments from lecture)**

MIDTERM (Thursday March 21st)

- **WEEK #9 April 2: Lab #5 Beach Sand**
- **WEEK #10 April 9: Lab #5 Beach Sand**
- **WEEK #11 April 16: Lab #6 Materials of the Seafloor + Finish Lab #5 Beach Sand**
- **WEEK #12 April 23: Lab #7 Waves and finish Lab#6. A draft of Introduction and Materials/Methods is due for all Beach Profilers.**
- **WEEK #13 April 30: Finish Waves / Review.
QUIZ #5 (Covers Labs 5, 6 & 7 and Waves from Lecture)**
- **WEEK #14 May 7: Lab #8 Tides & Mystery Beach, *BEACH EROSION MAPS DUE*
All Beach Profiles & Internet Research Reports are due on Thursday May 9th**
- **WEEK #15 May 14: Lab #9 Plankton Finish Mystery Beach.
QUIZ #6 (Covers Lab 8 Tides and Sea Level Changes from lecture)**

SPRING 2019 TENTATIVE LECTURE SCHEDULE

By Date

- 1/29 Introduction to Ocean Science
- 1/31 History of Oceanography
- 2/5 Finish History, begin Sea Floor Topography
- 2/7 Sea Floor Topography
- 2/12 Finish Sea Floor Topography, Ocean Basin Evolution
- 2/14 Ocean Basin Evolution
- 2/19 Marine Sediment
- 2/21 Marine Sediment
- 2/26 Marine Sediment
- 2/28 Coastal Environment
- 3/5 Coastal Environment, Intro to Lab #9 Beach Walk
- 3/8 Coastal Environment
- 3/7 Seawater Chemistry
- 3/14 Seawater Chemistry
- 3/19 Seawater Chemistry

- 3/21 MIDTERM (Thursday) 11:10 a.m. - 12:30 p.m. in Room 450**

- 4/2 Finish Seawater Chemistry, Ocean Currents
- 4/4 Ocean Currents
- 4/9 Ocean Currents
- 4/11 Waves
- 4/16 Waves
- 4/18 Waves
- 4/23 Tides
- 4/25 Tides
- 4/30 Sea Level Changes
- 5/2 Sea Level Changes
- 5/7 Marine Biozones and Ecology
- 5/9 Primary Production & Plankton
- 5/14 Plankton and Nekton
- 5/16 Plankton and Nekton
- 5/21 Comprehensive Final Exam (Tuesday) 10:00am – 12:50pm, Room 450**

NONDISCRIMINATION and ACCESSIBILITY NOTICE: The District is committed to equal opportunity in educational programs, employment, and all access to institutional programs and activities. The District, and each individual who represents the District, shall provide access to its services, classes, and programs without regard to national origin, religion, age, gender, gender identity, gender expression, race or ethnicity, color, medical condition, genetic information, ancestry, sexual orientation, marital status, physical or mental disability, pregnancy, or military and veteran status, or because he/she is perceived to have one or more of the foregoing characteristics, or based on association with a person or group with one or more of these actual or perceived characteristics.

The Accessibility Support Center (ASC) offers academic support for students with disabilities at Cabrillo College. We are here to assist students with disabilities in achieving their academic goals by providing equal access to educational content and facilities. For more information, contact <https://cabrillo.edu/services/dsps/>

Support Services: Cabrillo College has many programs and services designed to help you during your academic journey. You can visit the website at <http://www.cabrillo.edu/services/studserv/index.html> for a complete listing of support services. These services are provided free of charge while you are a student. Please take advantage of them.

Financial Aid: Cabrillo College provides several financial aid opportunities for students. For tuition and/or book assistance information, go to <https://www.cabrillo.edu/services/finaid/>

Student Rights and Responsibilities: You are expected to contribute to a positive learning environment. Your responsibilities as a student include:

- *Respect for your fellow students, staff, and faculty
- *Actively participating in the learning environment
- *Taking responsibility for learning and progressing in your course
- *Requesting assistance from the instructor when needed
- *Adhere to all academic integrity principles
- *Reading and understanding the Cabrillo Student Rights and Responsibilities Handbook. (the student grievance procedure is outlined beginning on pg. 18 of the handbook).
- *Following all school policies and procedures (All policies and procedures can be found at <http://www.cabrillo.edu/associations/governingboard/BoardPolicies.html>).

Safety: Cabrillo College is committed to providing a safe and secure campus environment. The college will not tolerate acts of harassment or violence. For campus safety and security information, go to <https://www.cabrillo.edu/services/sheriff/>

